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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/723,829	11/25/2003	Nam Seok Ko	2013P132	9271
8791 7590 05/17/2007 BLAKELY SOKOLOFF TAYLOR & ZAFMAN 12400 WILSHIRE BOULEVARD SEVENTH FLOOR LOS ANGELES, CA 90025-1030			EXAMINER PATEL, JAY P	
			ART UNIT 2616	PAPER NUMBER
			MAIL DATE 05/17/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/723,829	KO ET AL.	
	Examiner	Art Unit	
	Jay P. Patel	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☒ Claim(s) 6-27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to the claims filed on 11/25/2003.

Specification

2. The disclosure is objected to because of the following informalities:

The disclosure contradicts itself; on page 4, lines 37-38 it is stated that the forwarding table 30a had an 8-14-10 multi-bit trie structure. However, according to page 9, lines 15-17, the third table is processed by extracting the least significant 12 bits. Appropriate correction is required.

Claim Objections

3. Claims 6-15 and 18-27 are objected to because of the following informalities:

Claims 6, line 7, the word "most" should be changed to "least".

Claim 18, line 9, the word "most" should be changed to "least".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Gupta et al. (IEEE publication titled: Routing Lookups in Hardware at Memory Access Speeds).

In regards to claim 1, Gupta shows in figure 6 an indexing scheme where entries from three different tables are used to lookup a next hop value for forwarding a packet

(see 2nd column, 1st full paragraph on page 1243). (a forwarding table have a three-layer architecture used of searching a next hop using an IP destination address).

Gupta further teaches that for every incoming packet, a search must be performed to obtain next hop information in the router's forwarding table using prefixes the match the beginning of an incoming packet's IP destination address (1st paragraph in the introduction section, page 1240) (a forwarding engine which obtains packet processing information and next hop information for the input packet by searching for the forwarding table using the IP destination address as a search key).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gupta et al. (IEEE publication titled: Routing Lookups in Hardware at Memory Access Speeds) as applied to claim 1 above in view of Murase (US Patent 6993031 B2).

In regards to claims 2-5, Gupta teaches all the limitations of parent claim 1. Gupta however, fails to specifically teach the IP address look up system being installed in the input or output interface or a router, with the respective interfaces having link interfaces inclusive of a forwarding table and a forwarding engine and a routing information collection and forwarding unit that collects the routing and forwarding information and stores the information in the forwarding table.

Murase however, teaches the above-mentioned limitations. In figure 1, Murase discloses architecture of a router. Figure 2 is a detailed illustration of the packet processing circuit (input interface) of figure 1. The packet processing unit consist of a header copy circuit 1011 which copies the header containing the IP address and sends it to a header extractor unit 1012, which extract the IP address for the copied header and sends it to forwarding table 103 (collecting routing information and processing the collected information into forwarding information and storing in a forwarding table). The header copy circuit 1011 read on the input link interface and the address extractor circuit 1012 sending IP address to a forwarding table 103 reads on the forwarding engine and the forwarding table. The hit address converter circuit 1013 and output port translation circuit 1014 read on the output link interface and a forwarding engine. Furthermore, since the hit address converter receives an input from the forwarding table 103, it also reads on a forwarding table.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the next-hop matching technique taught by Gupta into the packet processing and forwarding architecture taught by Murase. The motivation to do so would have been to reduce router packet processing time by having layered forwarding table architecture.

Conclusion

8. Claims 6-15 and 18-27 would be allowed if the minor informalities stated above with regards to claims 6 and 18 were fixed.


9. Claims 16-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jay P. Patel whose telephone number is (571) 272-3086. The examiner can normally be reached on M-F 9:00 am - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571) 272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

jpp 5/10/07
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